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THE
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Rail Road News.

Railroad Conventions.

A Railroad to the Pacific seems to be the ruling public passion at present; Conventions to take the subject into consideration have been held in Chicago, St. Louis and Memphis. It is not possible to harmonize the conflicting interests of different parts of our country, in a work of this kind, and this shows us how delicate a matter public improvements in the hands of the General Government is. It is actually impossible to please or do justice in a great number of cases, and this one of a National Atlantic Pacific Railroad is one in point. The conflicting interests and feelings of our people in various parts, such as those of Memphis and St. Louis, will no doubt prevent the General Government having anything to do with the building of the road. The Government may make surveys and grant some privileges, in ceding the lands through which one or more roads may pass, but no more, in all likelihood. These opinions we have embraced after viewing the question in various bearings, and time will test the correctness of our deductions.

Boston, Concord and Montreal Railroad.

We understand from the Belknap (N. H.) Gazette that contracts are about to be closed for extending this railroad to Warren Village, 69 miles from Concord, and that the work of grading will be commenced in a few days. That between West Rumney and Warren, is estimated at only 225,000 cubic yards of earth excavation and embankment, costing about $25,000, or a little more than $3,000 per mile. The masonry is estimated at about $3,200. It is not likely to exceed $4,000 per mile to prepare the road for the track. The original estimate of this eight miles of the road, as surveyed by Mr. Crocker, was about $170,000, or about $142,000 more than the present line is to cost.

Pennsylvania and Ohio Railroad.

The Pittsburgh Gazette informs us that a corps of engineers were expected to arrive in that city, to begin immediately the locating of the railroad from Pittsburgh to Beaver, which is to be ready for contract on the first of January next. It will then be immediately put under contract, if the amount of subscriptions warrant it.

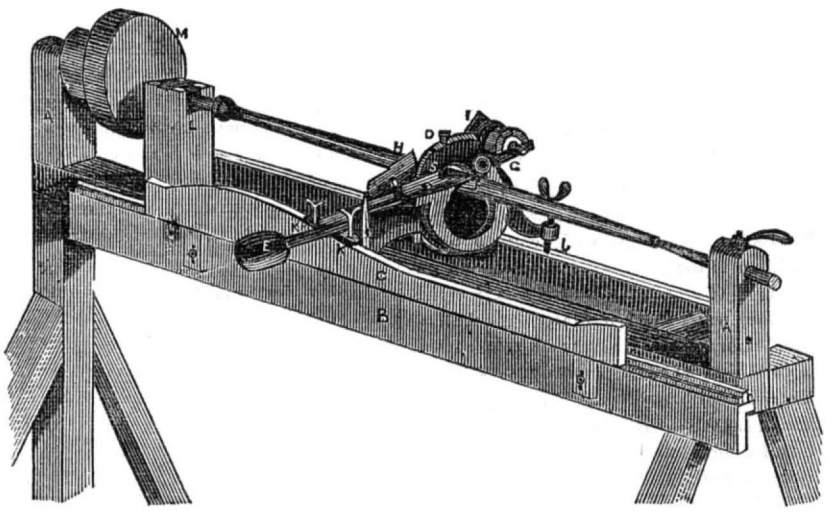
The people of Henderson, Kentucky, are endeavoring to start a road to Nashville, 130 miles. The West and South West are becoming sensibly awakened to the benefits of railroads.

The rails for the Hudson River Railroad are being laid down in this city. We are glad to see this; it will be a great accommodation to thousands of our working people.

The Oneida River, in this State, which runs from Oneida Lake to Oswego, has been improved, and a new communication is opened for boats from Oneida Lake to Ontario.

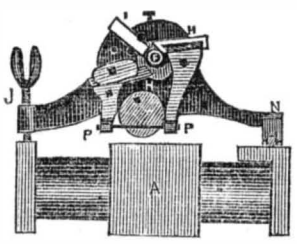
Mr. N. A. Austin, of Ashtabula Co., Ohio, has made a cheese which weighs 2000 lbs.

IMPROVED WOOD TURNING LATHE.---Fig. 1.



This improvement on wood turning lathes, is the invention of Junius S. Alcott, of Oriskany Falls, N. Y., and for which he has made application for a patent. Fig. 1 is a perspective view, and fig. 2 is a transverse section, showing the end of the tool stock and slide that are hid in fig. 1. The nature of this invention is to turn a piece of wood in such a way that different sections of it will be of different shapes —such as one round, another oval, another square, &c., by a pattern, but with a longitudinal sliding cutter. A is the uprights of the frame to sustain the live and dead centres. M is the pully to drive the live centre in its bearer kinds of wood work. S is the chisel on the handle, E, and F, is a piece of wood, just to represent how it is placed in the lathe. G is the inner end of the tool or chisel lever, connected to the handle by the arch, seen under and around the wood. The particular patr of this lever, is that the end, G, is fixed on a joint, which allows the tool to rise vertically, and also tohave a longitudinal roll motion, so as to make the knife cut deep into the wood, according as it is guided by the pattern rail in descending. D is the tool stock fitted on a slide to move from the right to the left end, on rails in the common way.

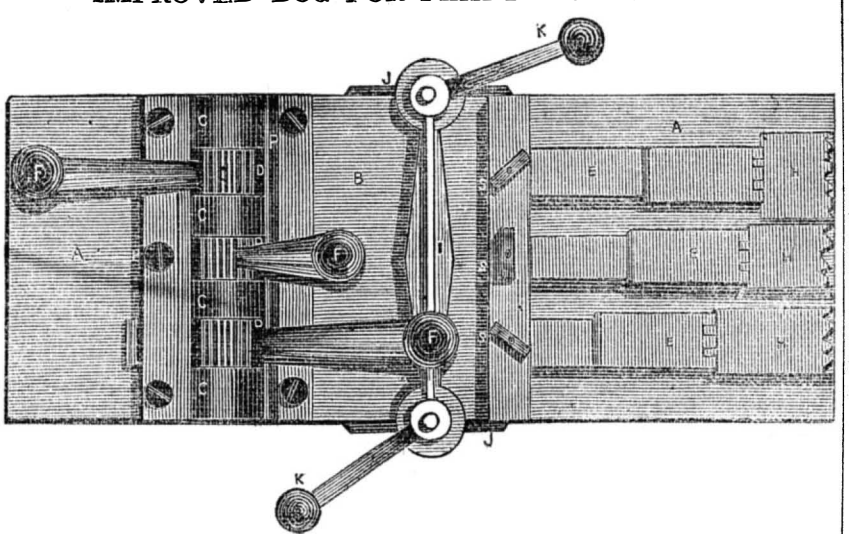
Fig. 2.



In fig. 2, J, the set screw slides on a rail, and N represents the other side. H H are two roughing off knives to cut the wood to a right size to pass through the die. These two knives can be changed in position by an eccentric, which is operated by the screw rod, P P. I is what is termed the feeding knife, which is set vertically, projecting outward from the face of the die (the opening through which the stick, F, passes.) This knife has its edge cutting in a spiral direction, and draws forward the tool stock to the wood to be turned. All the knives can be set in various positions, in a most beautiful manner. All the parts are made strong, and its good qualities are apparent—the best of testimony to its practical working can be produced. Persons who may wish to buy can be furnished them at $25 each, by directing to this office.

ing, L; B is the front sleeper of the rail on which the slide moves. C is the irregular pattern, which guides the tool, the handle of which is E, having two flanges, with holes in them, through which projects two set of screws, K K, placed apart and that rest on the surface of C, which must be formed to guide the handle to turn the pattern described. The pattern can be elevated or lowered, and so can the slide on the other side, to turn large and small-

IMPROVED DOG FOR PLANING MACHINES.



This is a plan view of a new Dog for Planing machines, particularly adapted to the Daniels' Machine, invented by Messrs. Joseph Adams & Son, Hadley, Hampshire Co., Mass. A is the bed piece upon which the plate, B, can be secured by clamps, J J, which catch below, and are loosened or made fast by the nut handles, K K. On the under side of the plate, B, are recesses for the dogs, E E E, to slide snugly in and out. These dogs have racks on their inner ends, into which are geared pinions, D D D, which act upon the racks by the levers, F F, to move the dogs, E, in and out, thus to hold boards, H H H, of various lengths.—Each pinion, D, has a separate axis, which moves in slightly elevated bearing boxes, C C C. This apparatus is very suitable for machines in the planing of boards of various lengths and for any number of such, at one time. S S S are set screws to retain the dogs firmly, when they are set. P P are two small metal strips, that are screwed down on the plate to retain under them, a cloth that will cover the gearing of the pinions and racks, allowing the levers only to project through holes cut in the same. This is to keep out the chips dust, &c. This apparatus is very convenient and useful, and the inventors have taken measures to secure it by patent.

Useful Receipts.

Glazes for Pottery.

There are three kinds of glazes used in Staffordshire, England—one for the common pipe clay ware, another for the finer kind, and a third for the ornamental kind. The common glaze is composed of fifty-three parts white lead, sixteen parts Cornish stone, thirty-six of ground flints, four of flint glass. These compositions are ground with water into a thin paste. Another is twenty parts of flint glass, six of flints, two of nitre, and one of borax. This is mixed together, and twenty parts of it are ground with twenty-six parts of feldspar, twenty of white lead, six of ground flint, four of chalk, nine of oxyde of tin and a small quantity of the oxide of cobalt.

Another glaze consists of twenty parts of flint glass, six of flints, two of nitre, one of borax. These must be calcined together, and to twelve parts of it add forty parts of white lead, thirty-six of feld-spar, eight of flints, six of flint glass, then grind the whole together into a paste. These substances make a glaze which is not easily acted upon by vegetable acids, and is very hard. The oxide of tin and borax is said to produce a good common glaze, not dangerous like lead for cooking vessels. In glazing earthenware the smallest possible quantity of lead should be used, but a glaze can be made of ground glass and borax to answer any purpose, for what is a glaze but a glass surface.

Camomile.

A few roots of this plant should have a place in every garden. Not only are its medical qualities highly valuable, but its presence among vegetables is supposed to be an Ægis of protection against many diseases to which they are subject. It should be transplanted into warm and rich soil, early in the spring, and be assisted, during its early development, by copious manuring and frequent pressure. When plants, late in the season, exhibit symptoms of decay or general debility, the planting of a small root of camomile in their vicinage is frequently the most speedy and efficacious remedy that can be applied. The odor, or aroma, diffused by this plant, is also known to be highly repellent to many kinds of aligerous insects, and its presence among those species of plants and vegetables infested by such enemies, will protect them more effectually than almost any other agent known, and at comparatively small expense.

To Purify Bees Wax.

Place the wax in a tin vessel, with small holes pierced in its bottom, and place it into an oven of the stove, or other oven, over a vessel of water. The wax will melt by the steam and drop down into the water below. This is also a good plan to purify glue.

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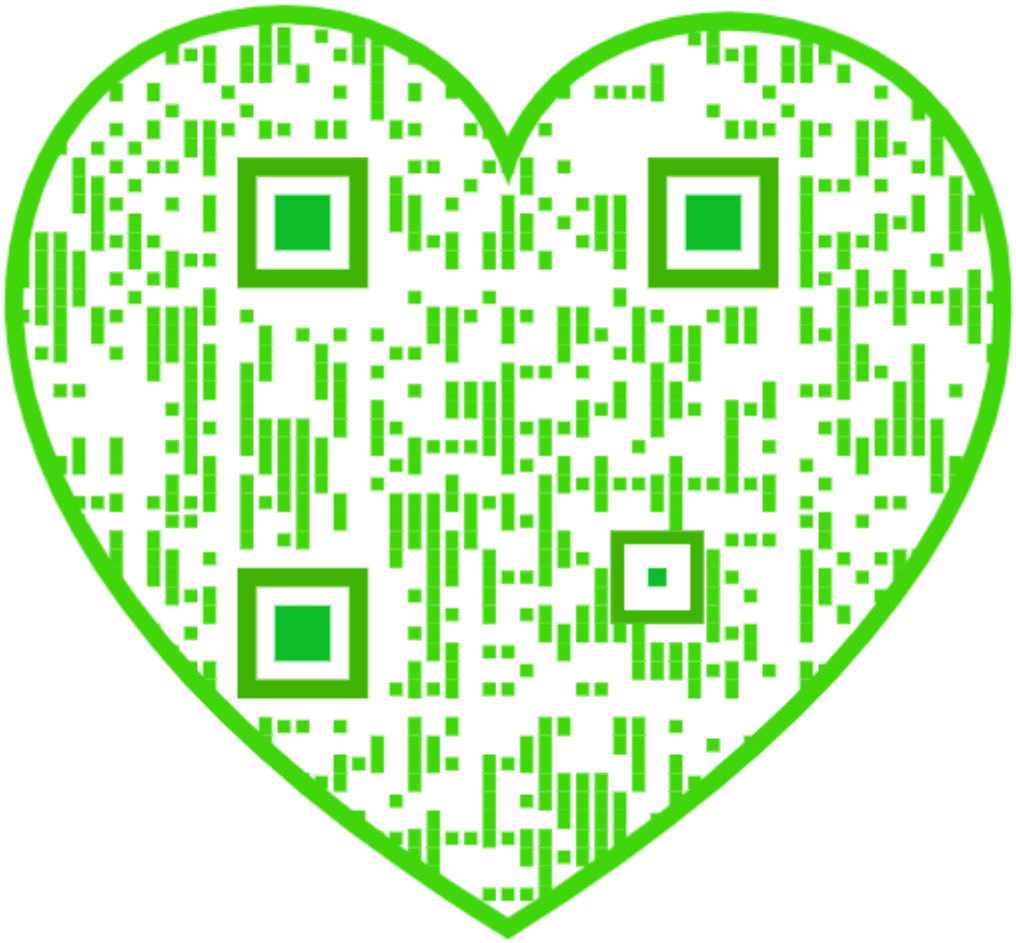

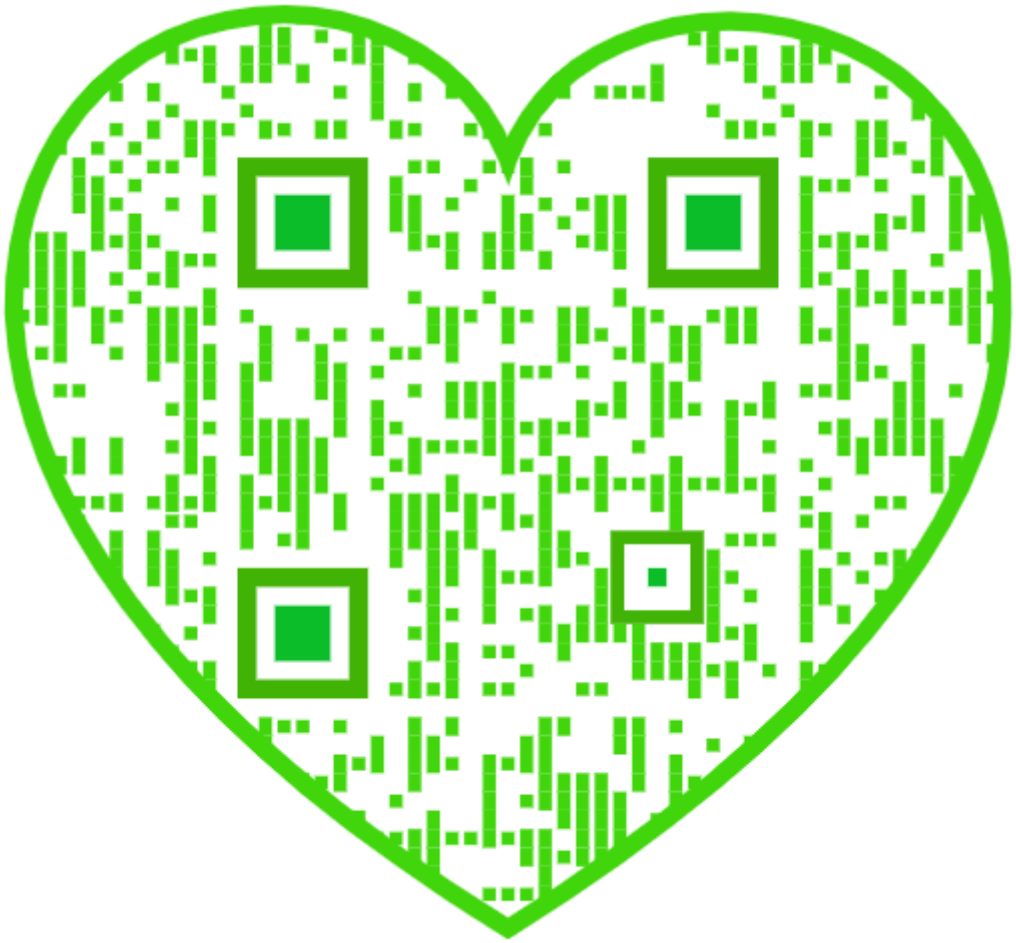

Miscellaneous.

Great Dam at Hadley Falls.

We learn from the Springfield Republican that the Great Dam, at the new city of Hadley Falls, is completed, and the Connecticut River bravely breasted, by one of the most stupendous works in this or any other country. The length of this Dam is 1000 feet and 30 feet high, on an average, and it has a base of 90 feet, we believe, in width. On Monday the 22d ult., the gates were closed, of which there were 44, each 18 feet long and 18 feet wide. They were closed in sections, and the water rose slowly at the rate of one foot in 40 minutes. A rough calculation of the amount of lateral pressure which the dam will be obliged to sustain, gives nearly twenty-nine million pounds, while the vertical pressure is about three times that amount. There have been used in its construction nearly four million feet of lumber. In the construction of the abutment, guard gates and lock wall, at the head of the Canal, there have been used 10,000 perches of stone, (25 cubic feet in a perch.) The engineer is a Mr. Anderson, who has earned a great character for himself, inasmuch as it is well known that a dam had been built there before (last year) and was swept away like a broken reed. From the time the gates were closed till the water went over the dam, was nine hours and sixteen minutes. Many believed that it would meet the fate of its predecessor, and we believe that a considerable amount was bet upon the result. We hope that it will long stand as a monument of engineering skill, and manufacturing enterprise.

Boot and Shoe Convention.

A Convention was recently held in this city at Judson's Hotel for the purpose of forming an association on the old plan of manufacturing, but the Chairman J. R. Pidken, Esq., stated that having heard of a new system, introduced into Massachusetts, he was induced to enquire into it, and the result was, that they concluded to pospone the starting of the company till they were able to begin right, and upon a broader scale. The plan proposed was that of manufacturing by "teams," that is upon the well established principle of division of labor, which has been so successful in England. Instead of having one man to make an entire shoe, there will be 15 makers to each, every man having his own department. One man cuts out the sole the shape of the foot by a single stroke of an instrument, and by another stroke the edge is pared, another man puts on the van, another drives the pegs, and so on. There was one boy, 12 years of age, in the establishment of Bigelow & Co., Marlborough, Mass., who commenced to peg in April, and from the 1st to the 14th of June he earned at the rate of $12 per month, and on the 15th he earned at the rate of $15 and his board, having pegged 35 pairs in a day. He knew an instance of another boy, in New Haven, who pegged 11 pairs a day for his schooling and boarding, and on Saturday when there was no school, he pegged 30 pairs. In one of these factories a Frenchman was able to earn $35 per month and board, by putting in the vans. One house was manufacturing $250,000 worth a year, another $500,000 worth, and in Mass. there were $18,000,000 worth manufactured annually; yet the demand was greater than the supply, and there was an ample field in New York for the investment of capital and the enjoyment of the surplus labor—hence the American Union Association was set on foot.

We believe that the brothers Bigelow, of Marlborough, Mass., have commenced the manufacture in this city, and there can be no doubt of their success, owing to the ingenuity and enterprise enlisted in the business.

New Variety of Railroad Subscriptions.

At the late election in Ohio, votes were taken in several counties on the proposition to make county subscriptions for various railroads, as the Pennsylvania and Ohio, the Central, and Scioto Valley road. Some refused and others voted to subscribe almost unanimously. The Cincinnati Gazette thinks the Scioto Valley railroad is secure by these subscriptions, and if made, will constitute an entirly new route between the Ohio river and the lakes. That paper says on this subject:

"County subscriptions is a new variety of credit, applied to the erection of public works. Some persons think unfavorably of them. We are of a different mind. We believe there have been no bonds issued to the public more stable, more sure to be paid, and more worthy of the confidence of capitalists, than those of counties. Were we buying public credit in the markets, we should prefer the bonds of a county to those of either State or City; and that for this reason the counties all have property. The tax necessary to pay the interest is but a light one. It is voted by the people on the spot, understandingly. The bonds are offered for property which can be sold to pay them. In fine, there is every element of sound credit, in county bonds, offered for railroads."

Commerce of the Great West.

A correspondent of the Concordia Intelligencer, asking the attention of Congress to the condition of the great Western rivers, on the ground of their national importance, remarks, that they water thirteen States, and half as many embryo territories. Their commerce is equal to that which floats on the ocean, in American bottoms, between our seaports and foreign countries. It is made up of the produce, manufactures, and imports of one-half the States of the Union. The great number of these States have direct interest in commercial facilities offered by the rivers, while the rest have a strong collateral interest in the same. Seven hundred steamers having an aggregate tonnage of 140,000 tons, navigated by 25,000 men, ply upon them. The steamers are worth not less than $12,000,000, and are navigated at an annual outlay, not short of $10,000,000, while the value of the merchandise transported by them, may be roundly estimated at $250,000,000, annually.

The Poetry of Railways.

Hon. James Gadsen, of Charleston, S. C., in a recent letter on the projected railway to the Pacific, calls it "the Iliad of the American Railway system." We quote a passage or two, which shows how he has been inspired by the poetry of the subject:—

Railroads are the perfection of highways. In security, rapidity, certainty of performance they have never been equalled. In speed there has yet been found no limit—sixty and seventy miles per hour have been accomplished, and one hundred is equally attainable; bringing Memphis within seven hours of Charleston. Among all the inventions of human ingenuity, however, so slow has been the progress of railways, and "so divided the merit of engineers to whom we owe them, that no individual has been bold enough to claim it for himself," while all unite in the tribute that it came, as it were, like an inspiration from the head of Medusa, which may, in the progress of similar inspirations, be perfected, but can never be superseded.

Sailing on the Mountains.

An iron steamboat is now building in this city to run on Lake Titiaca, which lies in the bosom of the Andes, in Peru, five miles above the level of the sea. It is to be made in sections, to be transported from the sea on the backs of mules, to its lofty native element, and there it is to be put together by mechanics sent out for that purpose. The owners of the boat is a South American Company, who design to drive a trade with the hunters and woodsmen along the borders of the lake, which has a length of about one hundred and forty miles—amply sufficient to establish a very respectable "coasting trade," in those upper regions of the world, with the aid of this first steam enterprise ever thought of for such a purpose. The trade of the new vessel will consist mainly in the freightage of furs, wool, and lumber, which will probably be brought down from the head waters and upper portions of the lake to its foot, and thence despatched on muleback down the mountain, to clothe and warm the inhabitants of the "lower regions."

New Well of Gas.

Our country presents a great number of natural curiosities, and among them all none seem to be more common than streams of subterraneous gas. We see by some of our Ohio exchanges that about 14 miles from Cleveland a great number of gas issues have been discovered on the farm of a Mr. Faulkner. It is said that about an acre of ground is covered with cracks, from which the gas escapes, and by placing a tube over one of the cracks, and applying a match, a most brilliant but yellowish flame bursts forth, which will burn steadily for any length of time. The proprietor made an excavation some twelve feet deep at one of the gas openings, and flung in burning hay. Quite an explosion followed, the hay was scattered in the air, and a blaze issued several feet high. It continued to burn until the ground caved in and smothered the flames. The ground from which the gas escapes never freezes, and nothing will grow upon it, although the soil is rich. The existence of the gas has been known there for a dozen years or more, and the quantity escaping, which is large, seems to be increasing rather than otherwise.

New Cotton Factory in Mobile.

A new factory is about to be erected at Mobile, the foundations of which are already laid—and will make a noble structure. The main building is to be 180 feet long, 54 wide, and three stories high; the boiler and engine house, 71 feet long, 54 wide, and two stories high—all to be made of the best Mobile brick. All the machinery has been contracted for at the "Mattewan Works," Mr. Leonard's, not far from New York. It is calculated for 5000 spindles and 186 looms, to be propelled by two engines of fifty horse power each. The goods manufactured will be principally four-quarter cotton fabrics, though a portion of the machinery will be allotted to three-quarter osnaburgs, stripes, &c. The Mattewan machinery has a most excellent character.

South Carolina Shirtings.

Shirtings and drills manufactured by the Graniteville Factory, in South Carolina, under the superintendance of Mr. Gregg, were exhibited in this city during the Fair, and we must say, that they cannot be surpassed in quality. The material of which they are composed, we think, is better than goods of the same number of picks that are made at the North.

American Shawls.

Some beautiful shawls of American manufacture, are now to be seen for sale in this city, and are coming into general favor. They are manufactured by the Bay State Mills, (Mass.), and are made in the Scotch style, very chaste in the patterns, and nearly rivalling the foreign manufacture.

Large Paper Mill.

The largest paper-mill in the world is said to be the great mill at Darwin, in Lancashire Eng. It cost $750,000, was worked by five hundred horse power, of steam and water; had nine paper making machines, besides all others connected with the trade, and had a reservoir of filtering water which cost $100,000.—Nine years ago this mill yielded a profit of from $60,000 to $85,000 per annum. At that time alterations were made in levying and collecting the duties, and, during the nine subsequent years, the mill was worked at a loss of $25,000 per year—the owners became embarrassed, and finally failed, and over six hundred persons were thrown out of employment.

New Stove Polish.

Messrs. Quarterman & Son No. 114 John st., this city, have exhibited to us a new composition for blacking and polishing stoves, which commends itself at once as the best article of the kind that we are acquainted with. It is made up in neat tin cases, and is applied in the same way as blacking is applied to a boot. It gives a fine polish, has no smell, and resists heat for a long time.

Corn Meal and Flour.

The excellent corn meal and flour, referred to in No. 6, is manufactured by Hutchinson & Floyd, Maine Mills, Cleveland, Ohio, and is a very superior article.

The Philadelphians are talking about establishing a line of steamers to Europe.

To Manufacturers, Mechanics and Inventors.

We publish an edition of 25,000 copies of the Scientific American this week, and circulate gratuitously 11,000 copies in the New England States among the Manufacturers, Mechanics and Inventors. It is hoped that all non-subscribers who chance to receive a copy of this week's paper, will be induced to remit us a dollar and have their names entered as subscribers for six months at least, and after that time has expired, if they are not satisfied that they have received a full equivalent for their money advanced, if they will return us the numbers in a good condition, their money shall be refunded.

We desire that every Manufacturer, Mechanic and Inventor should become familiarly acquainted with the "Scientific American," and then if they are not satisfied that it is a publication of merit, and one that ought to be liberally supported by all who feel an interest in the advancement of the causes which it advocates, then we say, discontinue it.

We desire that every Manufacturer and Mechanic should try the "Scientific American," and if they are not satisfied that they receive a dollar's worth of information from the work in 26 Nos., we will willingly refund the money on receipt of the papers. Try it. See Prospectus on the last page. The regular weekly circulation of the Scientific American is larger than all the other publications of its kind *combined* in the United States.

Washington, N. C., Oct. 30.

Messrs. Munn & Co.—*Gents*:—Enclosed I send you the amount of another year's subscription to your valuable journal—money better spent than any that I ever laid out before except when previously subscribing for the "Sci. Am."

I am the possessor of a treasure in your journal; from the first number of the first volume to the last number of the present volume that has been issued—and though they have cost me but a fraction over $12, including binding, postage, &c., I would not now be deprived of them for $100.

I think I have read every number—and they have been valuable to me beyond comparison. I frequently find information in one paper that I would not part with for the cost of the volume, if I was not sure of getting it again. I am carefully preserving these papers for those in my family who may come after me. Hoping that your paper will receive that liberal patronage it so justly merits,

I am Yours, Respectfully, *** C.

[The above extract we publish from a business letter, received from one of our valued subscribers in North Carolina. The author will please accept our thanks for his generous testimonial. We have also to thank the old and new subscribers for their prompt remittances for the present volume, and also for their generous assistance in extending the circulation of this journal.—[Eds. Sci. Am.

The Camera Lucida.

This beautiful instrument, an advertisement of which may be found in another column, we continue to manufacture, and would inform the public that we are able to supply orders for any quantity.

By the simple arrangement of a mirror and lenses, in a beautiful case 14 inches long by 10 inches wide at its base, and about 12 inches high—a most perfect and correct drawing can be taken of any machine or building, and it is particularly adapted to landscape sketching.

The only manufactory of the above instruments in this country is at the "Scientific American" Office, and those desiring to purchase will please address the publishers, Munn & Co., (*p.p.*) The instruments are securely boxed and shipped without extra charge.—Price $6.

American Slate.

Some of the first qualities of slate for roofing are now found in Vermont. It equals the Welsh, and somewhat resembles it. We see by Arkansas papers that a valuable quarry of it has just been discovered in Eagle Town, in the Choctaw country. The slate is in two hills, about a hundred feet high, which, it is said, are composed wholly of slate.

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Transactions of the British Scientific Association.—No. 2.

REFINING OF SUGAR.

Dr. Scoffern, after a few preliminary remarks on the anomalies which beset the colonial sugar-manufacturing functions, stated the actual amount of pure white and crystallizable sugar existing in the sugar-cane juice to be from 17 to 23 per cent., and the amount of juice contained in the cane to be about 90 per cent: of this amount only 60 per cent., on an average, is extracted,—and of this quantity only one-third part of its sugar is obtained, in a dark impure condition, instead of white and pure as as it might be extracted. The operation at present generally followed, in the colonial production of sugar, involved the use of lime, an agent which although beneficial in separating certain impurities and decomposing others, effects both these agencies at the expense of two-thirds of the original sugar. Curious plans have been followed to avoid the use of lime :—alumina, in its hydrated condition, had been employed but with inconsiderable success. As a purifying agent, the basic acetate of lead was known to be most potent, but could not be generally employed, owing to the existence of no sufficient means of separating any excess of that agent which might remain. Dr. Scoffern effects this separation by means of sulphurous acid forced by mechanical means into the sugar solutions. The process had been used for more than twelve months in one of the large British refineries, and a lump of sugar prepared by means of the operation was exhibited.—The advantages presented by this operation were thus summed up :—1. As applied to cane juice, and other natural juices containing sugar, it enables the whole of the latter to be extracted, instead of one third, as is now the case ; and in the condition of perfect whiteness if desired, without the employment of animal charcoal. Owing to the complete separation of impurities, the juice throws up no scum when boiled, and therefore involves no labor in skimming. Finally, the process of curing is effected in less than one-third of the present time,—and the quality of the sugar being in all cases so pure and dry, no loss in weight occurs during the voyage home. 2. As applied to the refinery operation, it enables the manufacturer to work upon staples of such impurity, that he could not use them on the old process. It yields from these staples a produce equal in quality to the best refined sugars produced heretofore—in larger quantity and in less time. It banishes the operation of scum-pressing, the employment of blood and lime. Finally, its cost is even less than that of the present refinery process.

Mr. Miller remarked that it had been objected that sulphurous acid absorbed oxygen, and passing into sulphuric acid impared the grain of the sugar. Dr. Playfair said it had been stated that sulphurous acid gave a taste to the sugar. Dr. Scoffern observed that his specimens proved that neither of these objections was valid. It having been asked if voltaic electricity had been found successful in removing the salts of lead from the sugar in Dr. Scoffern's process, Dr. Faraday expressed his opinion that it was impracticable. Prof. De Vry thought the molasses would contain acetate of lime which would be unfit for the uses to which it is put in Holland.

ON THE MANUFACTURE OF THE FINER IRONS AND STEEL.—BY MR. W. GREENER.

The first innovation on the old principle of manufacturing gun barrels entirely from old horse-nail stubs was due to the late Mr. Adams, of Wednesbury, who brought out what is termed Damascus iron, which is constructed of alternate layers of steel and iron faggotted, drawn down into rods, then tortuously twisted and when welded into barrels, forms the Damascus barrel. The success of this experiment, both in point of beauty and strength was so great as to be under-estimated at 50 per cent. as compared with the strength of stub twist iron. The next experiment was to blend more intimately than the above, steel, with the horse-nail stubs in the proportion of one to two of the latter. The paper described the mode of this ; and then went on to narrate that the next and most important improvement in metals was the manufacture of gun barrels from scrap steel entirely, and for this purpose old coach wheels were generally in request ; by clipping these into pieces, perfectly cleansing them, and welding in an air furnace, a metal is produced which surpasses in tenacity, tenuity, and density, any fibrous metal ever before produced. The tenacity of it when subjected to torsion in a chain testing machine is as 8 to 2½ over that of the old stub twist mixture. The perfect safety of barrels produced from it is astonishing ; no gunpowder yet tried has power to burst them when properly manufactured. These experiments had induced others on a more extensive scale ; to effect this, ingots of cast steel were taken from the mill made to No. 3 in the scale of carbonization. These after rolling into flat bars, were clipped into small pieces, immediately mixed and welded as before in the air furnace, drawn down into rolls, and re-faggotted ; these were subsequently drawn down, and were then ready for being made into gun barrels, either with or without spirally twisting them ; to form Damascene barrels from this was perfectly safe—this was ascertained by experiments. It was discovered that the density and tenacity of the metal was sufficiently great to effectually resist the enormous force of this great cast of gunpowder. The manufacture of swords was another article to which this improvement applied. All the investigations of the writer had tended to satisfy him that the Arabs thus produced their finely-tempered Damascus swords ; namely, using two steels of different carbonization—Mixing them in the most intimate manner, and twisting them many fantastic ways, but observing method in that fancy ; and it was a fact that no European sword has ever yet been produced equal to the Damascus.

COLORING GLASS.—BY M. G. BONTEMPS.

In this communication some important practical points connected with the coloured ornamentation of glass and porcelain were brought forward. In the first place it was shown that all the colours of the prismatic spectrum might be given to glass, by the use of the oxide of iron in varying proportions and by the agency of different degrees of heat—the conclusion of the author being that all the colours are produced in their natural disposition in proportion as you increase the temperature. Similiar phenomena were observed with the oxide of manganese. Manganese is employed to give a pink or purple to tint glass, and also to neutralize the slight green given by iron and carbon to glass in its manufacture. If the glass coloured by manganese remains too long in the melting-pot or the annealing-kiln, the purple tint turns first to a light brownish red, them to a yellow, and afterwards to green.—White glass in which a small proportion of manganese has been used is liable to become light yellow by exposure to luminous power. This oxide is also in certain window glass disposed to turn pink or purple under the action of the sun's rays.

M. Bontemps has found that similiar changes take place in the annealing oven. He has determined, by experiments made by him on polyzonal lenses for M. Fresnel, that light is the agent producing the change mentioned ; and the author expresses a doubt whether any change in the oxidization of the metal will explain the photogenic effect. A series of chromatic changes of a similiar character were observed with the oxides of copper ; the colors being in like manner regulated by the heat to which glass was exposed. It was found that silver, although with less intensity, exihibited the same phenomena ; and gold, although usually employed for the purpose of imparting varieties of red, was found by varying degrees of heating at a high temperature and recasting several times to give a great many tints, varying from blue to pink, red, opaque yellow, and green. Charcoal in excess in a mixture of silica alkline glass gives a yellow colour, which is not so bright as the yellow from silver, and this yellow colour may be turned to a dark red by a second fire. The author is disposed to refer these chromatic changes to some modifications of the composing particles rather than to any chemical changes in the materials employed.

Dr. Faraday spoke on the importance in all our inquiries of associating physicial and chemical science. In the beautiful facts brought forward by M. Bontemps it appeared that many of the changes of colour mentioned are purely physical. The phenomena of the change of manganese from white to pink in glass appeared to him inexplicable as a chemical effect.—Mr. Dilke inquired upon what peculiarity depended the differences discovered to exist in the coloured glass of the the windows of old churches and that of modern manufacture.—M. Bontemps stated that the observed differences were entirely due to age and imperfections in manufacture.—Dr. Faraday remarked that any irregularities tended to produce the diffusion of the rays which permeate the glass ; and that the opacity of ancient church windows was probably due to a superficial change of the external surface.—M. Bontemps stated that old glass was by repolishing rendered as transparent as any modern glass.

Nova Scotia Grindstones.

MESSRS. MUNN & Co.—*Gentlemen* :—Your truly useful and valuable paper has found its way into the British Provinces, where it cannot fail to advance the useful arts, and act as a stimulus to industry and invention. Among the numerous improvements, appliances and machines, which you have carefully delineated, I have not seen one adapted to cutting grindstones. In this Province there are a number of quarries which supply grindstones for domestic purposes and for manufactories. The most extensive and valuable of these quarries are in the County of Cumberland, at a place called the South Joggins. They are all noticed in Dr. Gesner's Industrial Resources of Nova Scotia—a work recently published in this city. One of the quarries at that place is particularly mentioned by the author, and is worthy of more than ordinary remark. It is called the "Bank Quarry," and is owned by Amos Seaman, Esq., of Minndie. The stone is called the "blue grit," and for its speedy operation in grinding, and for imparting a fine edge, is unrivalled in any part of the world. Twenty thousand grindstones are annually shipped from this quarry to the United States, besides a great number supplied to the country and other parts of the world : indeed, by the present process of cutting, the demand can scarcely be supplied. The rock, after it is raised from the quarry and split into masses of proper thickness, is chiselled into grindstones by the hands of workmen. Upwards of one hundred men are employed in this work during the season, and the labor required for it, greatly increases the price of the article.

I have thrown out these hints in the hope that some of your numerous readers in the United States, or in this quarter, may turn their attention to the subject, in order to invent a machine for cutting grindstones, whereby much labor would be saved and a valuable article of commerce rendered more perfect.

I am your obd't serv't, *****

HALIFAX, Nova Scotia, Oct. 24, 1849.

The Hero and the Printer.

"When Tamerlane had finished building his pyramid of seventy thousand human skulls, and was seen 'standing at the gate of Damascus, glittering in steel, with his battle-axe on his shoulder,' till his fierce hosts filed out to new victories and new carnage, the pale onlooker might have fancied that Nature was in her death throes ; for havoc and despair had taken possession of the earth—the sun of manhood seemed setting in seas of blood.—Yet, it might be, on that very gala-day of Tamerlane, a little boy was playing nine-pins on the streets of Mentz, whose history was more important to men than that of twenty Tamerlanes. The Tartar Khan, with his shaggy demons of the wilderness, 'passed away like a whirlwind,' to be forgotten forever ; and that German artisan has wrought a benefit, which is yet immeasurably expanding itself, and will continue to expand itself through all countries and through all times. What are the conquests and expeditions of the whole corporation of captains, from Walter the Penyless to Napoleon Bonapart, compared with these movable types of Johannes Faust? Truly, it is a mortifying thing for your conqueror to reflect how perishable is the metal which he hammers with such violence ; how the kind earth will soon shroud up his bloody foot-prints ; and all that he achieved and skilfully piled together will be but like his own canvas city of a camp—this evening loud with life, to-morrow all struck and varnished—'a few earth-pits and heaps of straw.' For here as always, it continues true, that the deepest force is the stillest ; that, as in the fable, the mild shining of the sun shall silently accomplish what the fierce blustering of the tempest in vain essayed. Above all, it is ever to keep in mind that, not by material, but by moral power, are men and their actions governed. How noiseless is thought! No rolling of drums, no tramp of squadrons, or immeasurable tumult of baggage-wagons, attends its movements.—In what obscure and sequestered places may the head be meditating which is one day to be crowned with more than imperial authority! for kings and emperors will be among its ministering servants ; it will rule not over but in all heads—and with these its solitary combinations of ideas, as with magic formulas, bend the world to its will! The time may come when Napoleon himself will be better known for his laws than for his battles, and the victory of Waterloo prove less momentous than than the opening of the first Mechanics' Institute."—CARLYLE.

Good Cooking.

Good cooking does not consist in producing the highest seasoned dishes, nor such as to foster a morbid appetite ; but in preparing every dish well, however simple or common it may be. There are, for instance, families who never eat any good bread from one century to another, and have no idea in what it consits. Nor are meats cooked any better within their precincts. Those little, simple, and healthy delicacies, which the good housekeeper knows intuitively how to produce, are never seen here. Even a dish of potatoes cannot get themselves well boiled. A member of the family might as well fall among the Hottentots, as far as any proper nursing is concerned. These things ought not to be, nor is there any need of their existence, if the wife has any just notions of her obligation to herself and those about her.

Grapes of California.

California grows some splendid grapes, and and from letters received from that country, it appears to be well adapted for the culture of the grape vine. At Pueblo de los Angelos there are some fine vineyards. They make both red and white wine, and great quantities of agua ardiente, or Spanish brandy, of a very pure and colorless description, of an agreeable taste, superior quality, and the highest proof. A most delicious cordial is likewise made, called Angelica. The grape likewise grows in great luxuriance around San Francisco.

Another Intestinal Snake.

The Cumberland (Md.) Alleganian states that on the 24th inst. an Irishman who resides near Lonaconing, threw from his stomach a living snake, five or six inches in length.—for several years past he has been in delicate health, and latterly subsisted almost wholly upon milk. On Wednesday, at the earnest persuasion of several of his countrymen, he was induced to drink with them. Directly after swallowing the liquor, he was seized with vomiting, and threw up the snake.

[This story must be set down in the regular vocabulary.

Consumption of Cotton.

According to an estimate in the New Orleans Bulletin, the cotton manufactories in the United States will require for the next ten years at the rate of 470,000 bales of cotton, of 400 lbs. each, per annum ; equal to 752 millions of yards ; eighty millions for exportation and 772 millions for domestic consumption. This allows for an average annual increase of population from immigration and natural increase in ten years of one million per annum.

At a wedding in Albany recently, the bride's cake excited general admiration. It cost $100, and was a beautiful temple nine feet high, of the Grecian and Italian style of architectur e.

Iron was discovered in Crete by the burning of Mount Ida, B. C. 1432 ; first cast in England at Backstead, Sussex, A. D. 1544.

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New Inventions.

Discoveries in the Manufacture of Sugar.

Some time ago, we published an extract from *Galignani* relating to an alleged discovery by a young Belgian chemist, in which it was stated, that simply by the introduction of *some kind* of powder into the beet or cane juice, all the sugar soon was separated and deposited into beautiful white crystals without much more trouble. Since that period we have had many enquiries from gentlemen in the south, about it. In the Transactions of the British Association, published on another page, there will be found something new for our sugar makers, and the following is all that we have been able to gather respecting the alleged discovery of Melsen.:—

A quantity of cane juice was extracted from crushing the cane, to which was added some hyposulphate of lime in a powder. The juice was then boiled and passed through a cloth, then boiled, and passed through a cloth the second time, after which it was left to slow crystalization, which resulted in crystals of great beauty without any molasses. This experiment was performed in Paris, and it is stated that if the refuse canes, after being crushed, are washed with water, good sugar, with little boiling, will be deposited by the hyposulphate of lime, and no fears of fermentation.

Experiments in respect to this alledged discovery can easily be made by our sugar manufacturers. The hyposulphate of lime is added to the juice or sugar liquor, after which it is boiled to a syrup, when it is left to cool and crystalize, without applying any bone black, &c.—the substances now used for that purpose. We should like to hear the results of experiments made by those who may try Melsen's process, and those who may try the process of sulphurous acid, as described on page 59 of this paper.

Yerger's Artificial Leg, and Ankle Supporter.

Two gentlemen called at our office yesterday for the purpose of enabling us to examine the operation of these truly useful and ingenious contrivances. One of them, about 11 years since, had his left leg torn off just below the knee, while he was engaged in a machine shop. He was incapacitated from walking for about three months, and then resorted to crutches. He found them very inconvenient and then resorted to what is called a straight peg leg.

This was fastened on his bended knee, and he hobled through the streets after a fashion. A short time since he heard of the invention of Mr. George W. Yerger, and he immediately obtained one of M. Yerger's "Metallic Skeleton Artificial Legs," which he has ever since used and with complete satisfaction. He is now able to stand and work at a lathe all day, and to use either feet while so engaged. The other gentleman about five years since, had his left ankle crushed by an immense piece of iron falling upon it. The accident was a shocking one, and he was compelled to use crutches for about two years. He then resorted to Mr. Yerger's Ankle Supporter, and he is now able to walk so well by means of this instrument, that a spectator unacquainted with the fact would not discover the slightest imperfection in his gait. Mr. Yerger, the inventor of these truly valuable articles, is a Philadelphian, and has established himself at the S. W. corner of Second and Dock streets. All who are short of a leg, or who have weak ankles, are recommended to call, examine and decide for themselves.

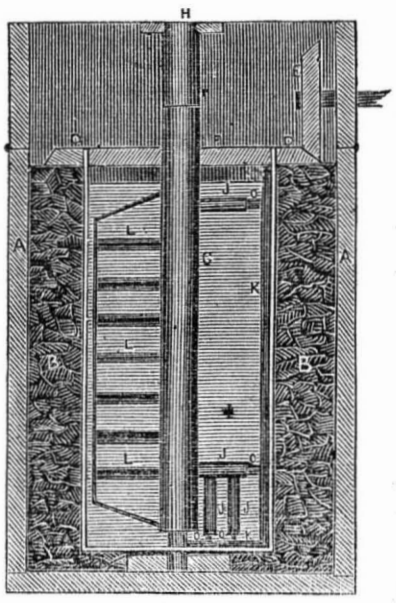
[The above is from the Philadelphia Inquirer and is unqualified commendation of a useful invention. Full engravings and description of it will be found of Page 309, Vol. 4. Sci. Am., the most popular vehicle for spreading abroad a knowledge of all good inventions.

Improvement in Oatmeal.

In No. 5, page 36, we directed attention to a new manufacture of oat meal, which had been highly spoken of by some of our foreign exchanges. Since that time we have been informed that the improvement merely consists in making oatmeal—which is generally somewhat coarse—into fine flour, and baking it in the same way that wheat flour is baked. A patent is taken out for the process by a Mr. Craig. The claim of the inventor, is the making of flour from oats applicable to the making of bread, biscuit, or pastry. This claim would be fully sustained by the courts there, but if presented to our Patent Office, it would in all likelihood be *rejected*. We have no doubt but the manufacture of oat flour is a good invention, and we see it stated that Professor Johnson considers it to be, on the whole, as nutritive for diet as wheat flour. This was also the opinion of old Buchan, but our opinion is in favor of the wheat flour.

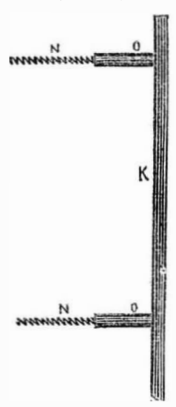
Masser's Patent Ice Cream Freezer.

Fig. 1.



This is an *Ice Cream Freezer*, invented and patented by Mr. H, B. Masser, Editor of the Sunbury American, Pa. Figure 1 is a vertical section, and figure 2 is a section of the scraper. The same letters refer to like parts. A is an outside box, B is the ice; C is a fixed shaft passing through the centre of the ice cream vessel. It runs in a bearing at the foot, and one in the cross-piece, H, above; J J are small tubes fixed on this shaft, and N N, fig. 2, are coiled springs inserted into these tubes on the arms, O O, of the scraper, K. L L are arms or beaters, fixed on the shaft, C, also; E is a pinion on the driving handle which meshes into the bevel wheel, D, and is secured on the top of the ice cream vessel, therefore the vessel revolves, while the dashers are stationary. As the ice first forms on the inside surface of the cream vessel, the scraper, K, is kept in contact with the surface the by springs, N, and thus the mixing of the frozen with the un-

Fig. 2.

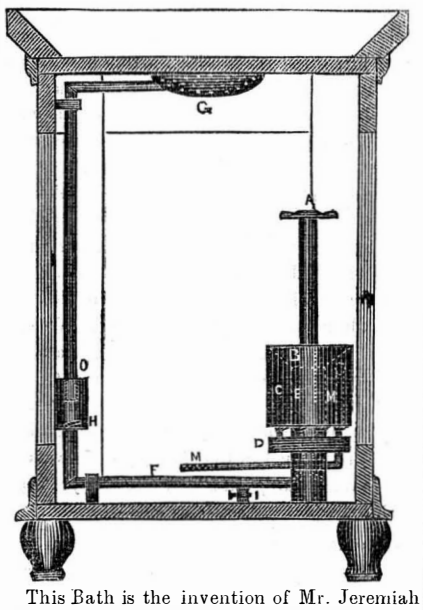


frozen portion, is admirably performed. The same arrangement is used for scraping the bottom, as indicated by the same letters. Mr. Masser has another arrangement (not seen here) to produce a compound motion in the cream vessel, viz., by gearing to give the beaters, L L, a motion contrary to the cream vessel, but it is not required, as this arrangement seems to meet every point desired for a perfect machine of this nature. A fly wheel and the compound motion may with advantage be applied on large freezers. By the joints above, at the sides, is represented the cover, which is formed of two parts that fold over on hinges. The scraping of the cream from the sides, as soon as it is frozen, is a scientific idea, not only to facilitate the operation, but to make a smooth and completely mixed article.

The advantages of this Freezer are, that cream can be frozen in less time, with much less labor, and with greater uniformity than by any other method. The whole labor can be performed by a child of twelve years of age. Its uniformity of motion prevents its churning any of the cream into butter, and the cream will invariably turn out good, if good materials are used. Everything being closed up it makes no dirt and the cream may be churned in a parlor. With a little practice, an eight quart freezer of cream can be frozen and ready for use in thirty minutes. After the box is re-filled with ice the cream can be kept frozen 24 hours.

Communications (*p.p.*) addressed to the Editor of the American, Sunbury, Pa., about rights &c., will meet with prompt attention.

Cold Shower, Warm Shower, and Vapor Combined Bath.



This Bath is the invention of Mr. Jeremiah Essex, of Bennington, Vt., and was patented on the 28th of last September. Its utility, as will be observed by the description, is beyond all question. This is an inside elevation, showing the whole arrangement. By it a person can take a cold or warm shower, or a vapor bath, at pleasure.

The outside casing is the box of the bath, which may have screen sides like the common kind, and the tubes below, as they are small and lying on the floor (the one, F, may run below the floor,) can be of no inconvenience. C is a small circular vessel of water surrounding the tube, E, seen in section, and communicates with it by a small opening inside, near its bottom. When the tube, E, is nearly filled, the vessel or chamber, C, contains water to the same height. F is a conducting pipe extending up into the tube, E; and A is the handle of a piston, which extends down into E, having its lower end made to force the water up through the pipe, F, past the valve, H, into the shower vessel, G. This gives a cold shower bath. To make a warm bath, D is a lamp placed under the vessel, E, which heats the water, when it may be forced up as in the cold shower.

To make it a vapor bath, the pipe, M, seen partly in section, is attached near the top of the vessel, C, and it has holes at its lower end to let the vapor escape into the chamber.—When used for a vapor bath, the piston should be withdrawn, and the inside hole in the vessel, C, closed up, when the lamp will generate the steam in a short time. The top of the vessel, C, to the tube, E, is made of a funnel shape, as represented by B, to allow the water to be easily poured in. I is a faucett to drain off the water that may be in the pipe, and there is an attachment to the outside of the valve case, O, to lift the valve, H, to drain off the water above.

The different parts of this bath are very simple, to accomplish its triple object. Many persons, for some diseases, require warm and cold baths in succession. This is just the apparatus for them. The lamp burns spirits, is always clean, and gives out a great heat, to do its work rapidly. More information may be obtained by letter (*p. p.*) to the patentee.

If chalk gets upon iron, by using a little sand when the iron is a red heat, it will weld perfectly well, as the sand and chalk forms a glass which assists in welding.

The Oxide of Zinc as a Paint.

A correspondent of the United States Gazette, in commenting upon the value of zinc-white as a substitute for white lead, and combatting some objections that have been urged against its use, says that the principal obstacle to its employment has been the difficulty of working the material which arises from the fact, that workmen who are acustomed to a certain routine of practice, are at fault when a new article is set before them, and after attempting to use it according to the method with which they are acquainted, and not finding it to succeed, condemn it as useless. Although persuaded of the beneficial results which would follow from the use of zinc white, the masters will not take the trouble to look into the matter themselves, but rely upon their workmen, and thus the public is persuaded that the application is impracticable.

The first thing is to procure oil as nearly white as possible; this is essential, if a bright color be required, for as the zinc white possesses less body than white lead, colored oil imparts a color to it which tarnishes its brightness; if, however, a yellow color be required, there is no occasion to be so particular about the whiteness of the oil. The most suitable oil—which is generally white enough—is the oil of the black poppy, which may be procured from Flanders and Alsace, where it is in common use. In default of this, any other siccative oil may be used, provided it be white.

The zinc white may be ground, while dry, into a powder, with the mullet; it must then be scraped with a painter's knife into a heap, in the middle of which a hollow is to be made to receive a small quantity of oil; the whole is then to be mixed with a knife, so as to bring it to the consistence of thick mortar, or paste, and rather dry than otherwise. This paste is then spread upon a separate pallet, from which a small quantity is taken and put under the mullet and ground. It is scraped up with the knife, and placed in heaps on the stone, where it is again ground, the mullet being carefully placed upon the centre of the heaps. When, by this means, the color is spread over the whole surface of the stone, three or four times, from one end of the stone to the other, the whole must then be scraped off with a knife. This operation soon becomes easy of performance, as zinc white has a fine and easily separated grain. If it be too liquid, it will be necessary to add a sufficient quantity of powder to give it the required consistency, and again grind it. It is then to be put into a clean vessel, containing clean water.

When large surfaces are to be painted, the brushes used must be very soft and not too close in order that the color may be laid equally.

As a substitute for white lead, zinc was first used in France, and the above is a too highly colored picture of its merits taken from a French journal. It will never come into use in this country, for common white, if we have to go to Flanders for poppy oil, nor can it (the zinc) be profitably applied, except mixed with the only oil that should be used, viz., good linseed.

The following is Mons. Rochaz's method of using the white of zinc, as recently patented in England, viz.:

The patentee makes a durable white paint or pigment by taking twenty parts of the oxide of zinc, four parts of resin, two parts turpentine, and one part drying oil. This forms a very speedily drying paint. He also employs the coarser portions of the oxide, which are scraped from the passages and other parts of the apparatus for mixing with lime, and when so employed as mortar, the compound forms a very hard and durable cement.

Another mode of using white oxide of zinc is this:

Instead of litharge as a dryer, take three-quarters of a pound free oxide of manganese and 20 lbs. linseed oil to every 100 lbs. of oxide; boil the oil and manganese together for 6 or 8 hours, beginning with a small quantity of oil at first, and increasing gradually until the whole of it is poured into the vessels, stirring the mixture all the time. When boiled allow the same to cool and settle. Draw off the oil and mix it with the oxide in the usual way. For fine work mix it on a marble slab.

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Scientific American

NEW YORK, NOVEMBER 10, 1849.

Scientific Associations.

Associations for the promotion of science, by the calm discussion of mooted points, and the reading of short but comprehensive papers on various subjects, are among the most useful institutions in the world. "Mechanics' Institutes" are certainly of great importance, but along with their libraries and winter courses of lectures, one grand element of personal and general elevation has been overlooked, we mean the personal interest and action of the members in the manner pointed out in our introductory sentence. It would be a great improvement in the manner of conducting Mechanics' Institutes, if the members were divided into Committees, to whom various questions might be referred for investigation. In Boston there is a Society of Civil Engineers which pursues this course, and they have issued some Reports which are of no little importance to the scientific world. An institution of the same nature, was instituted in this State last year, but for more than twelve months we have heard nothing about it. The American Scientific Association, the British Scientific Association, the Berlin and St. Petersburg Scientific Societies, together with the Paris Society of Arts, are all conducted in the manner we have described. A good library, a course of philosophical lectures, and a debating society, makes up the whole routine (along with a Fair, perhaps) of all Mechanics Institutes. These things are all very well, almost indispensable, but something more is wanting to enlist the energies and interest all the members. There are mechanics and artisans in every shop, who are capable of throwing a great deal of light upon many subjects, if drawn out to give an opinion, but who have not the faculty or face to engage in debate. Mere debating societies are generally ruled by the longest winded and loudest talkers, and result in no substantial benefits to their members. We therefore commend to the attention of all voluntary associations for mental improvement and the promotion of knowledge, the policy of dividing the association into various committees, such as one on Geology, another on Mechanics, Chemistry, &c. These committees might report, or hold their discussions once a month, and thus there would be a meeting of some one every week.

By the Hartford Courant we learn that a very spirited meeting has been held there for the purpose of organizing the mechanics, manufacturer and artisans into an Association for the advancement of science and art. This society intends to have a repository of models, machinery, and works of art. Without something of this kind, a mechanic's institute labors under the most manifest disadvantages. We have often heard the remark made, "mechanics never hold long together." We have seen the truthfulness of this remark verified in a great number of instances. They seem to embrace new projects relating to their own interests with zeal, but soon fall back into the arms of apathy, or what is worse, get into disputes, and divide into factions about things that are no *bigger* in importance than the shadows of dreams. Above all things we advise our mechanics and artisans, in respect to every institution which they may establish, to engraft upon their escutcheon "Knowledge is Power,"—"Don't give up the Ship." There is not a village of any importance in our widespread country, but should have an association of the nature set forth above. It should belong to no class, but embrace within its folds all who have a taste for, or take an interest in the progress of science and art, and the propagation of useful knowledge.

The Blow-pipe and its Uses.

The Science of Chemistry, above all others, has recently made the most rapid strides, and has produced the most marked effects upon the arts and manufactures. Various causes have led to this rapid advance in chemical science, but to no one cause can we attribute so much influence, as to the improved apparatus for conducting experiments. In the days of old the alchemyst's study was a truly *tartarean* abode, "with furnaces and cauldrons, boiling, burning hot;" but all is changed now. No apparatus has produced greater results than the simple blow-pipe, and a treatise on its uses, by Prof. Plattner, translated and edited with emendations, by Dr. Sheridan Muspratt, Prof. of the Liverpool (Eng.) College of Chemistry, is one of the most instructive and useful works that ever has been published. By the simple blow-pipe, the beginner is instructed to discover the presence of cobalt, antimony, arsenic, lead, silver, bismuth, manganese, seleneum, sulphur, zinc, chromium, and a number of other simple substances. To the mineralogist this work is of inestimable value, and no geologist nor chemist should be without it. We like to call attention to these things, in order to direct our readers to sources of information which they may desire to possess, but know not where to turn to find them. The original work can be imported.

Important Patent Cases.

TELEGRAPH CASE.

The trial of Morse against H. O'Reilly, for infringement of patent, by what is called the use of the Columbian Instrument—Zooks and Barnes, the inventors, was decided at Frankfort, Ky., on the 30th ult., in favor of the plaintiffs, and Mr. O'Reilly appealed. This decision does not affect the Chemical Telegraph—it was a very different instrument. We have heard no fault found with it.

PLANING MACHINES.

The case Wilson vs. Barnum, was left like Mohammed's coffin, on the 30th ult., before Judges Kane and Grier, Philadelphia. The trial was a very long one, and the Jury, after being out all night, came in and stated that they were unable to agree, and asked to be discharged. Their request was granted, the Judges stating that they could not agree themselves. We wish that this case had been decided. It is one patentee sueing another—an old patentee endeavoring to overthrow a young one. Mr. Stoughton, of this city, was counsel for the defendant, and the Philadelphia papers speak in glowing terms of his able, eloquent and manly effort in summing up the evidence.

On the 1st inst., the defendant's counsel moved to dissolve the injunction, and call another jury this term. The plaintiff's counsel opposed the hearing of the application until Ex-Governor Seward should be present. This will be on next Monday, we believe. We heard that the jury were nearly unanimous, only two for plaintiff; and ten for the defendant. As this is a very important patent case, and tho whole country on tip-toe about it, we will publish in parts, commencing next week, the charge of Judge Grier on the occasion, in which will be found a vast amount of legal knowledge (which every inventor should know) on patents and inventions.

PATENT TOOL CASE.

In the United States Circuit Court, at Boston, on the 30th ult., before Judge Woodbury, the case of Herrick Aiken vs. Calvin Foster was committed to a Jury—being an action for infringing the plaintiff's patent for a new and useful improvement in tool-sockets. A verdict was rendered for plaintiff of $1,224 damages. Hon. Daniel Webster, who was counsel for plaintiff, moved the Court to *treble* the damages in this case, as provided in the act of Congress which may be done by the Court in the exercise of its discretion.

In our list of patents this week, there is one to R. Smith and A. Bain, for improvements in Chemical Telegraphs. From evidence which has long been in our possession, we can confidently state that the claims of this patent, for a single circuit and the use of a style, will stand *first* against all others in the world. The *Electro-Chemical Telegraph*, Company has now laid on the coping of their structure, and it is our opinion that no other company can use an electro-chemical telegraph, so as to make chemical good marks, by a *single* marker.

Jackson, the American Deer, has been beaten in a foot race at Buffalo, by an Indian named Canada. He ran 10 miles in 55 minutes and 49 seconds.

Piracy of Inventions.

A recent case of this kind has come under our observation of a very extraordinary character of which we will give the facts, preferring not to publish names. It appears that a very worthy yet poor mechanic in the State of Wisconsin, had for some time been engaged in the manufacture of an agricultural machine, and by repeated experiments made at such times as his circumstances would allow, succeeded in effecting very important improvements in the machine, which would render it a better operator, and at the same time reduce the price twenty-five per cent. less than they had ever been sold. Not suspecting that any person could be so contemptably mean as to wish to rob him of his just rights, he communicated his ideas to a person who was about to purchase one of the original machines.

The inventor was surprised not long since to observe in our list of patents, the name of the person to whom he communicated his ideas, for improvements in these machines. What was more surprising, he found upon examination that these improvements embraced the ideas he had previously communicated to the piratical patentee. We publish this statement, made to us by undoubted authority, for the purpose of impressing inventors with the importance of keeping their ideas secret from the world, until they are prepared to take counsel from a respectable source in regard to making an application for letters patent. Any person having a doubt in relation to this matter, can satisfy himself by calling at this office. And as friends to inventors we feel it our duty to give them such advice as will enable them to adopt the measures for securing their just rights.

Paine's Hydro-Electric Light.

MESSRS. EDITORS:—I am an attentive reader of the Scientific American, and take a deep interest in the progress of science and art.—Your paper is a repertory of invention and discovery, and whatever is *new*, merely alledged, or real, is sure to find its way into your columns, there to receive a critical editorial review, or (a very commendable course,) the review of others. No subject has interested me more than the alleged discovery by Mr. Paine, respecting his Electric Light. I candidly admit that I am a perfect sceptic, so far as it relates to the production of an economical light produced by a galvanic battery, and more skeptical respecting the production of a *good* or *cheap* light from the decomposition of water by a current of electricity, generated by mechanical *laboring force*, such as the descent of a weight to drive revolving magnets. It is no satisfaction to me to be told that a brilliant light has been produced by electricity. Such things have been done before, and while any part of the process remains hid from the public view, I for one must look upon it in the same light in which Mr. Paine looks upon the public, namely, with suspicion. If the discovery is new and useful, our Patent Laws will fully protect it—there can be no question about this, in my mind.

There is one point about the invention of Mr. Paine which I cannot understand, as it contradicts a well-known indisputable fact in chemical science, namely, the production of a brilliant light by the decomposition of water. Water is composed of oxygen and hydrogen gases,—and the hydrogen gas, that alone which burns, does not produce a white, but a blueish light. To produce a white light, the hydrogen has to be mixed with carbonic gas, forming carbureted hydrogen. This is so well known that until the contrary is established clearly, who can be blamed for their doubts on the subject. Nothing can satisfy me, as a matter-of-fact man, but a full knowledge of the subject, so that the truth of the alledged discovery, can, by scientific men, be fairly tested by philosophical experiment.

I have carefully read the letter of Mr. Paine, (on page 28, this vol. Sci. Am.,) in which he claims the discovery of *condensing the electric fluid, compressing it like the atmosphere*, in a receiver, *accumulating the force of it till it bursts the receiver*. This is a most wonderful discovery, and a no less wonderful statement. Time will prove its truth, as well as that of many other wonderful things. If the production of Mr. Paine's Electric Light is so cheap, and is such a wonderful thing, and as he says, "has been burning on a large scale for months, without a single attempt to dispute the originality in point of time or fact," surely he can have no objections to reveal the process, since the invention is *safe* in the eyes of the law, and in the hands of heavy capitalists who can protect it. Until this is done, one person at least, since he cannot get correct knowledge, must subscribe himself A GIOR.

New York, 1849.

Woodbury's Patent Planing Machine.

Quite a number of patent board planing machines were exhibited at the Fair, one of which, that of Mr. Law, has already been illustrated and described in our last volume.

Owing to the difficulties experienced by many, in conducting their business, for want of a good planing machine, liable to no interference from the owners of the Woodworth Patent, various machines with stationary and reciprocating cutters, have been brought forward from time to time, to equal if not supersede, (what no one can deny) the good qualities of the Woodworth machine. On the 20th of September, 1848, a patent was granted to Joseph P. Woodbury, of Boston, Mass., for a planing machine, which was exhibited at the Fair, and was admired by many good machinists, whom we might name. The Roxbury Gazette, (Mass.), speaks upon good authority in pronouncing it a most perfect machine, and we have seen a certificate of Mr. W. Nye, of Fall River, Mass., who has been intimately acquainted for eighteen years with our best planing machines, and who has had charge of two rotary machines for the last year, and he says that he has seen Woodbury's machine operate on different kinds of timber, and has no hesitation in saying, that it will do three times the amount of work, with less repairs, in a given time, than a rotary planing machine. We have seen this machine operate, and have a very high opinion of its merits.

New York Mechanic's Institute.

This Institution, in their new rooms, No. 105 Bowery, is exhibiting considerable spirit. The members are becoming more interested, and there has been a great increase within a short time. Every mechanic in our city should join it, but this we do not expect, while nonsense is preferred by so many, to knowledge. The men who join it exhibit a desire to get good and do good. We might have, in this city, one of the best Mechanics' Institutes in the world. On Monday evening next the introductory lecture will be delivered by the Rev. E. H. Chapin, at the Coliseum Rooms. An address will be delivered by the President, Hon. Zadoc Pratt, after which popular music will be performed by the pupils of the school connected with the Institute.

Notice.

We have not yet been able to publish Junius Redivivus' article, nor the one on the Centre of Gyration. We have also some articles upon an alleged new discovery in the laws of mechanics, also a letter from Mr. Frost, of Brooklyn, in answer to the Report of Professor Horsford, of Harvard, published on page 24 of the Scientific American. We intended to publish Mr. Frost's letter this week, but were not able; it will appear in our next. We have a great number of communications on hand. They will be published in order.

ERRATUM.—There was a slight mistake in our article on the "Depth of the Ocean," published in No. 6. It says "suppose a cubic foot of lead is one hundred times heavier than a cubic foot of water, it will occupy one hundred times less space." It should have read, "it will occupy 100 times less space than water, according to its gravity."

The Fair of the Franklin Institute closed on Saturday last. We are pleased to observe that medals were awarded to the Charleston Steam Mills, and the Granitville Co., S. C., for excellent specimens of brown muslin. The exhibition was very fine throughout. Just as we expected.

The making of turpentine has commenced on some of the pine forests of Florida and has proved very profitable.

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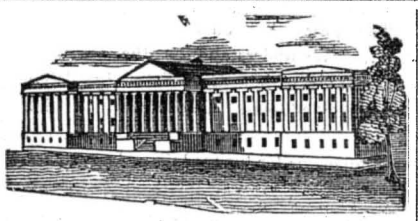

LIST OF PATENTS CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending October 30, 1849.

To Benjamin Arnold, of East Greenwich, R. I., for improvement in Gearing. Patented Oct. 30, 1849.

What I claim as my invention and desire to secure by letters patent is the mode of transmitting motion from the pulleys of a double geared lathe or turning engine, to the main shaft or arbor of the same, with a decreased speed and a corresponding increase of power, by means of the eccentric secured on the inside of the large hollow pulley, and turning within the large wheel, arranged eccentric with the shaft and having cogs on the inner periphery of the projection at its outer edge, meshing in gear with a circular cogged ring secured to the inner surface of the detached face plate, and held stationary by the connecting rod or plate, and also the hub keyed to the main shaft or arbor, having arms made convex on their extremities and concave on their sides, so as to form circular openings or spaces when inserted in their places, in which the bolts or pins revolve in their passage around the axle or arbor, alternately striking the concave sides of the arms and causing them to revolve slowly, in such a manner as to cause the large cog wheel to revolve around the cogged ring, just so many cogs as it possesses more than said ring, at every revolution of the eccentric, and a proportionate slow speed to be given to the main shaft or arbor, as herein set forth, or in any other mode substantially the same.—[See an engraving of this machine on page 113, Vol. 4, Sci. Am.]

To Henry Burt, of Cohoes, N. Y., for improvement in Feed apparatus for Shingle Machines. Patented Oct. 30, 1849.

I claim a self-adjusting feed motion, produced by the interposition of friction between metallic surfaces, in the connections of the parts of the driving gear, or any two of those parts, by means of a friction strap, as described, or any analogous mode which shall allow the adaptation of the speed of the carriage holding the material to be cut: to the resistance the material affords to the saw, especially in cases where unusual and temporary obstacles, such as knots, &c., interpose, which might otherwise cause the destruction of the teeth of the saw and other parts of the machine—a very important practical result of the adjustment being that it produces smoother sawing in stuff of irregular texture than machines now do.

To Henry Bachofner, of Springfield, Mass., for improvement in Looms. Patented Oct. 30, 1849.

Having thus fully described my improved Loom, what I claim therein as new, and for which I desire to secure letters patent, is—1st, the combination of the jacquard cylinder with the depressing frame, and fingers for the purpose of working the uprights thereby, through the medium of the fingers, as herein set forth.

Secondly, I claim the combination of the lifting and depressing frames, with the crank shaft, by means of a rock shaft connected with said frames by connecting rods, and worked by the crank shaft with which it is connected by a rod for that purpose.

Third, I claim the frames for suspending and carrying the harness in combination with the marches and the apparatus for working the same as above specified.

Fourth I claim the combination of the hooks for lifting and depressing with the marches and harness frames without the aid of cords as herein set forth.

Fifth, I claim the construction and application of the adjustable crank, by which I effect an adjustment in all directions in a simple and convenient manner.

To James Cole, of Cincinnati, Ohio, for improvement in Stoves. Patented Oct. 30, 1849.

Having thus fully clearly and exactly described the nature, construction, and operation of my invention and improvement in stoves or furnaces for heating, cooking or other purposes, for which equivalent combinations are suitable. What I claim therein as new and desire to secure by letters patent, is concentrating the issue of the gases evolved during combustion as they pass from the fire chamber into a reverberating chamber, and are at that point commingled with jets of air, the said issue or orifice being in the proportion of a circle of one third, or less, the diameter of the reverberating chamber into which it opens, and combined with an opening from the discharge of the reverberated current by the fire bowl, orifice, drum and opening, and for the purposes set forth.

I also claim the disc inserted immedietely above or on a level with the top of the opening for the exit pipe, and having a central orifice of suitable diameter, and perforations arranged as described and for the purposes set forth.

I also claim locating the opening for the exit pipe as described in combination with the disc and the orifice.

I also claim the disc constructed and described in combination with the orifice as described and for the purposes set forth.

Andrew J. Folger, of Nantucket Mass. for improvement in keeping Ledger accounts. Patented Oct. 30, 1849.

Having thus described my invention I claim the box with the plate, or false bottom, constructed with the slits for the reception of the cards, the said cards being arranged with two alphabetical indexes arranged at right angles to one another as a direct index reference to the name and surname of individuals with whom accounts are kept.

I also claim the card index formed with the shoulder to suspend the card in the slit of the plate or false bottom, and to form a part of said card to pull it out and insert it in the slit as herein represented and described. [This is a very useful invention for bookkeepers, no one should be without it.]

To William Farley, of Smithsburg, Md., for improvement in Barrel Carriages. Patented Oct. 30, 1849.

What I claim as my invention and desire to secure by letters patent is the combination of the arcs and hinged legs with a barrel carriage substantially in the manner, and for the purpose herein set forth.

To Lewis Fagin of Cincinnati, Ohio, for improvement in Mills for grinding. Patented Oct. 30, 1849.

Having thus full described and represented the nature and operation of my improvements in flouring mills what I claim therein as new and desire to secure by letters patent is

1st., Surrounding the feeding tube and cup with a shield constructed and attached as described or in any analogous manner and for the purpose described viz., preventing the blast of air from disturbing the regularity of the feed and deflecting and directing the same vertically downwards so as to cause it to force the grain between the grinding surfaces of the stones.

Secondly, Inserting and extending down into the eye of the runner a cylinder to which the balance rive is permenantly attached or cast (whether made with or without a metallic back and hoop for the stone) attached at its upper portion to the stone forming, with the eye of the runner stone at its lower portion, a recess into which the stationary cylinder of the bed-stone projects, and furnishing an attachment for the balance-rive elevated above the centre or face of the runner the whole being arranged and described or in any analogous manner and for the purpose described, viz., preventing any grain jumping over the tops of the stationary cylinder that stands on the bed-stone, and hanging against or choking the eye of the runner stone, directing the air blast vertically downwards, in connection with the cylindrical projection of the shield and, most important of all, affording an attachment for the balance rive above the level of the grinding surface of the runner, thus leaving the same undiminished and unbroken, and avoiding the usual interference of the balance rive and driver with the feed, or its tendency to hanging in the eyes of the runner stone of the stationary cylinder on the bed stone is used.

Thirdly, Attaching to the bed-stone a cylinder, resting on suitable feet and within the sweep of the eye of the runner, the cylinder or circular partition being of such diameter and elevation as fit it to project up into the recess forward, by the eye of the runner stone and the cylinder, which is inserted and attached therein and to allow the same to revolve around and within it, the whole being arranged as described or in any analogous way and for the purpose described, viz., preventing the grain coming into contact with or being carried around by the revolving runner, and thereby hanging in and choking the eye of the same, the grain not having the same tendency to hang on the vertical wall of a stationary cylinder, and also continuing the vertical and downward direction given to the blast until it escapes between the stones.

Fourthly, In combination with the closed air chamber for passing the blast between the stones dressing the inner and leaving without dress the outer portion of the area or face of the stones; say from the circle described by the eye of the runner, dressing one half the radial distance, more or less, thence out and leaving the balance all band.

Fifth (This is left out.)

To Ebenezer Garnsey of Watertown, Conn. for improved Weather Strips. Patented Oct. 30, 1849.

I claim the hinge constructed as set forth, in combination with the mode of stopping the same from shifting the position horizontally to the right or left hand, when in ordinary use.

I also claim the method of detaching the lower strip whenever desired; by the method in the specification described; in combination with the mode of keeping the lower strip suspended above the sill, as herein set forth.

To Jeter & Watson, (Assignees of Hugh Jeter,) of Lexington, Ky., for improvement in Planing Machines. Patented Oct. 30, 1849.

What I claim as new and desire to secure by letters patent is, graduating the pressure applied to the lumber on the rest, in proportion to its thickness, substantially as herein set forth.

To Nathan Kinman, of Buffalo, N. Y., for improvement in Flour Packers. Patented Oct. 30, 1849.

What I claim as new is

First, The packing apparatus consisting of a combination of the tube, and inclined blades for condensing the flour and retaining it while moving the barrel substantially in the manner and for the purposes set forth.

Secondly, I claim the hollow shaft for expelling the air from the barrel in packing as above described, I also claim the self-acting clutch in combination with the packing apparatus in the way set forth.

To Lucius Leavenworth, of Trumansburg, N. Y., for improvement in Fences. Patented Oct. 30, 1849.

What I claim and desire to secure by letters patent, is the mode of fastening pickets or paling fences by means of a series of links, formed on the wire for receiving and retaining the pickets, the ring for securing the wire to posts, and the hooks for connecting the pieces of wire together in a line of fence, in the manner substantially as herein set forth.

To Roger Lightbown, of Eaton, N. Y., for improvement in Power Looms. Patented Oct. 30, 1849.

What I claim and desire to secure by letters patent is,

First, The cam on the fast pulley, in combination with the lever or click, the crooked rod, the coil spring, the catch and the lever, constructed and arranged in the manner substantially as described, for the purpose of arresting the motion of the loom at pleasure, as herein set forth.

Second, I claim the mode of stopping the action of the loom instantaneously by a self-acting operation, when the shuttle gets caught in the race-way of the lathe, by means of the chisel on the rod catching against the head on the crooked rod and projecting the click or brake against the cam on the fast pully, in the manner substantially as herein described.

Third, I claim the combination of the vibrating lever or treddle, and the connected spring with the cord or rod, the vibrating fingers on the rod, and the fenders, for the purpose of arresting the momentum of the shuttle as it enters the boxes, the cam on the shaft operating and giving motion to the fingers in the manner substantially as described.

To Adolphus Lotze, Cincinnati, Ohio, for Improvement in Stoves. Patented October 30, 1849.

What I claim herein as new, and desire to secure by letters patent, is attaching the exit pipe to the funnel shaped tube or shute, so as to collect and transmit down into the fire the soot precipitated during the passage of the results of combustion to the exit pipe, substantially after the manner and for the purpose herein fully described and represented.

David Marsh and Eli B. Nichols, of Fairfield Conn., for improvement in Mills for grinding. Patented Oct. 30, 1849.

We do not claim to have invented a cup, to intervene between the bail spindle and fixed centering cup, but what we do claim as new, is, First the construction and application of the cup with edges to receive the bail and spindle, preventing the ends of the spindle from separating, thereby forming a more permanent attachment to the bail. Second the constrnction and application of the cylinder with screw flanches outside, and spiral plate inside, forming a screw to force the grain between the stones and also to prevent its pumping out of the eye, as the running stones and bail give the grain or other material, a rotary motion against the direction of the stationary screw flanch, substantially as described and shown.

To Orrin Rice, of Cincinnati Ohio, for improvement in Wash boards. Patented Oct. 30, 1849.

I wish it to be distinctly understood that I do not claim any of the several parts composing a wash board made of sheet metal and wood, but that which I do claim as my new and useful improvement in the mode of manufacturing such wash boards and for which I ask letters patent, is incising with the edges of the sheet metal (prepared and crimped as described) the legs or the legs and body-board, by the suitable application of pressure thereto, thereby fitting and attaching the one to the other at one operation and with a comparatively water tight joint.

William A. Ross, of Port Richmond, N. Y. for improved means of making sails. Patented Oct. 30, 1849.

I do not claim to have invented any of the parts herein described, as separately from the manner in which it is employed, no one part is new; but I do claim as new, the attachment of a rope to the bolt rope of a sail. to act as a downhaul in lowering and to sheet the sail home when hoisting such rope passing by sheaves or locks, or in any convenient manner from one end of the boom to the other, so that it operates to release the cringle and relieve the sail, when hoisting substantially as described and shown.

Robert Smith, of Blackford, Perthshire, Scotland, and Alexander Bain of Beevor Lodge, Middlesex, England, for improvement in Electro Chemical Telegraphs. Patented Oct. 30, 1849.

What we claim as new is,

Firstly, The mode of arranging the several parts of our marking instrument for electro chemical Telegraphs, substantially as hereinbefore described.

Secondly, We claim the mode of adjusting a style or a point holder, as herein before described, and shown so as to afford a ready and convenient mode of regulating the pressure of the style or point upon the surface of the chemically prepared fabric.

Third, We claim the mode of applying the weight for the purpose of regulating the pressure, as herein described and shewn.

Fourthly, We claim the mode of arranging the marking and transmitting instrument, wires and batteries in a single circuit and in branch circuits connected therewith, so that a copy of a message sent from any one station may be marked upon the chemically prepared paper or other fabric at one or any desired number of stations in communication therewith, and also if required, at the transmitting station, without requiring the use of any secondary current.

To Wm. S. Thomas, of Norwich, N. Y., for improvement in Springs for Carriages. Patented Oct. 30, 1849.

I do not claim springs in combination with elliptic ones, nor do I claim a spring, pearch, or reach; but what I do claim as my invention and desire to secure by letters patent, is the combination of the adjustable springs with the bent spring reach, by bolting one end of said springs to said reach and connecting the bend of said spring to the bent part of the reach by an adjustable link or clasp in the manner and for the purpose set forth.

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To John L. Tuttle, of Lawrence, Mass., for improvements in the mode of making toothed cylinders.—Patented Oct. 30, 1849.

What I claim is the mode of setting and adjusting the teeth of toothed cylinders, made substantially as hereinbefore described, the said improvement consisting in the employment of the screw in combination with the external tube of paper or metal, the said screw not only enabling me to set the teeth in a helix line, which presents great advantages in their operation, but to readily withdraw it (the screw) at the proper time, and for the introduction of the cylinder as described.

To Wm. J. Van Ness, of Baltimore, Md., for improvement in Transverse Callipers. Patented Oct. 30, '49.

What I claim is the transverse callipers, having legs so formed and connected so as to insert into the bung of a cask to ascertain its length from head to head, or its width from side to side, substantially as herein described.

To Jonathan Sullivan of Lexington, N.C., for improvement in Straw Cutters. Patented Oct. 30, 1849.

RE-ISSUES.

To Moses Pinnock & Samuel Pinnock, East Marlborough, Penn., for improvement in Seed Planters.—Patented March 12, 1841; re-issued Oct. 30, 1849.

We wish it to be understood that we do not claim the separate or individual action of the seed tubes independently of the seed rollers and hoppers:—but what we do claim is,

First, The simultaneous throwing into and out of operation, by the movement of a lever or other mechanical equivalent, or device, each seeding cylinder and its respective drill, or seed tube, for the purpose of sowing with any number of hoppers and drills that may be required in sowing point or other irregular land, without stopping the animal or animals attached to the machine—not intending to limit ourselves to the particular construction herein described and represented in the annexed drawings, but to vary these in any way that we may deem proper, so that the before described results are effected by means substantially the same as those described in the foregoing specification.

Secondly, We also claim the arrangement of the spur wheels for the purpose of connecting the seed rollers, and hoppers, to the shaft, as before described, in such manner that they can be disengaged at pleasure whilst the machine is in motion.

[We will publish no claim that contains no idea of its nature. Subscribers who wish the full claim will be furnished, if desired, by dropping us a note. The list of names will always be full. The claims this week, are of wonderous length.]

TO CORRESPONDENTS.

"J. C., of Mass."—The model and engraving of your parallel vice were forwarded to you by Adam's & Co.'s Express, on the 29th ult.

"Z. F., of R. I."—We have given your views a candid consideration, and are free to confess that they are valuable. You had better apply to some ship owner in Providence for an opportunity of testing their value, and report us the result.

"A. P. T., of Pa."—Your favor has been received. We hope you will hurry up that model as fast as possible; there has been much delay already. We shall attend to it as soon as it reaches us.

"I. A. L., of N. Y."—Some time in August last, we wrote you concerning some matters in which you have a personal interest, but have not heard from you since. We cannot watch the matter any longer, and trust you will dispose of it at once. How do you succeed with those experiments?

"Dr. J. B. R., of Ala."—Your papers and model have been received; we have not had time to examine them, but will do so as soon as possible and write you by mail.

"G. H., of Troy."—We cannot discover any patentable novelty in your plan for making steering wheels. The number of pieces makes no difference in a novel point of view.

"J. S., of Pa."—We have examined the principle of Mr. P.'s patent, and think it good. We knew of the existence of this patent, but had never before seen a drawing of it. There can be no doubt of its validity, and we have never known of its having occasioned any contention. We should say, "go on." But if you should ever purchase a right again, be sure that it is secured by letters patent.

"J. C. W., of N. C.—A first rate straw cutter can be purchased here for 12, 14, 16, 18, or 20 dollars—according to the size; we should think it would cost about $1,50 or $2 to deliver it in Columbia. Grant Thorburn, Esq., of Charleston, formerly of this city, can doubtless furnish you with any kind of fruit trees.

"E. F. W., of Conn."—There are several machines in use for folding cloth. A machine constructed "entirely different" from the one referred to, could be patented, provided it did not interfere with any other. Our opinion in reference to its mercantile value, is, that it would depend much upon its utility and management; if the machine should prove valuable, there is no reason why it should not pay, much however depends upon management.

"R. A. J., of Mo."—We cannot see any ground for your supposition. The principles contended for are well known to all scientific mechanics. We happened to have a succinct statement on hand, which we have forwarded to you for consideration. Please return it as soon as you have perused it sufficiently.

"C. N. H., of N. H."—We believe as Olmstead does, in respect to momentum. We do not endorse the wrong opinion to which you refer, and over which we had no control. Something will come up soon to review the whole field.

"N. & R., of Waterloo."—Your letter of the 26th ult., reached us safe. We regret to say that the number wanted cannot be supplied, as we have none of them on hand. The accompanying note was forwarded to Mr. Robertson's address. We are endeavoring to collect the information sought, for future publication in the Sci. Am. We approve of your ideas in relation to the use of pulverized, hard wood charcoal, it would be well for you to make further experiments, as your interest is one of great importance.

"O. P., of Mass."—We do not know of any such instrument as you refer to.

"E. C. L., of N. Y."—We could not send the complete set of Vol. 4, ordered by you. Your name, together with Mr. H.'s has been entered for Vol. 5, complete.

"J. K. J., of Pa."—There are no advantages derived from your plan. The spark arresters obviate the necessity of introducing anything to extinguish the sparks.

"H. W., of Md."—Having no knowledge of the instruments referred to, we have forwarded your letter to Mr. H. for attention. No. 50 sent; No. 20 have not.

"B. B. S., of La."—There can be but one objection to your machine—that is, you employ more gearing than is necessary. One bevel gear is just as good as two. Try it and see if we are not right.

"H. A. F., of Vt."—Do you mean to be understood, that a vacuum can be produced in the cylinder by revolving it? Can you revolve a cylinder faster than air will rush into a vacuum? These questions require your study.

A. J. P., of N. Y., D. L. G., of N. H., J. I., of N. Y., and D. B., of Mich., your applications have been forwarded to the Patent Office since our last issue, *with* the required fees.

Money received on account of Patent Office business, since Nov. 1st, 1849:—

A. J. P., of N. Y., $20; L. A. & Son, Mass., $30; D. L. G., of N. H., $20; J. I., of N. Y., $20; H. L., of Ind., $30; J. P. G., of N. Y., $20; D. B., of Mich., $50; N. P. D. & R. G. H., of Ct., ea. $30; R. S. T., of Me., $10.

"The Scientific American.—This valuable paper has been numbered among the missing, upon our table. How comes this?"—Martinsburgh Gazette.

We would inform friends Miller and Potterfield, that we cannot answer their question unless we lay it to Uncle Sam's door. Every number of the new Vol. has been sent from this office to the Gazette.

Notice.

We refer our subscribers to No. 5 of this Vol. for particulars in relation to back numbers. We would also say, that whenever our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

ADVERTISEMENTS.

Patent Office.

128 Fulton St.

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N. B.—Any person desirous of receiving a copy of the Yankee Blade," as a sample, can be accommodated by notifying the publishers by letter, post-paid.
OPINIONS OF THE PRESS.
The Yankee Blade.—Our readers need not be told that the Yankee blade is an excellent paper. The fact is known and undisputed among all communities into which the paper has been introduced and wherever the name of Mathews, its worthy and accomplished editor, has been made familiar. It gives us pleasure to notice that the labors bestowed on the Blade are justly appreciated by the reading public, and that the editor finds consolation and reward, as well in its popularity, as in the more substantial evidences of friendship and patronage. Very recently, the Blade came to us as bright and shining, and as clear of the least particle of rust, as though it had never before been in use, and when we took it up and turned it over and over, examining its smoothness and keen glittering edge, we could not feel less than gratified at the success of our Yankee friend, and could not do less, the first opportunity, than express all that we felt.—[Godey's Philadelphia Dollar Newspaper.

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8 3m* Painters and Chemists.

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Z. C. ROBBINS,
CONSULTING ENGINEER AND COUNSELLOR FOR PATENTEES.
Office on F street, opposite Patent Office, Washington, D. C. j20 tf

NOTICE TO CAPITALISTS.—We are authorized, by a company in the State of Ohio, to call the attention of those interested in the manufacture of flour and woollen goods, to the sale of a large and well established concern in one of the best regions of the great State. The ill health of the partners compels them to retire from business. The full particulars in relation to the above property, may be had by personal application to the subscribers, or by letter, post-paid.
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3 6* 128 Fulton st., N. Y.

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m1 tf 166 Fleet street, London.

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y28 4meow 303 West 17th street, New York.

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BARLOW & PAYNE, Patent Agents and Consulting Engineers, 89 Chancery Lane London
m12 tf Patent Journal Office.

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For the Scientific American.

Vegetable Sensibility.

The principle which disposes a plant to take cognizance of the different agents to which it may be exposed, has been termed irritability by some, sensibility, or sympathy, by others. The Cassia nictitans and chamæchrista are sensible to the touch, and always resent the rude and officious hand that presumes to meddle with them. If an insect touch the inner part of the stamens of the Barberry, it immediately strikes its author against the stigma. The leaves of the Dionæa muscipula are bordered with bristles, and secrete a fluid, of which insects are very fond. When any one happens to light upon the leaf it immediately springs together like a rat-trap; the bristly points locking into each other, squeeze the insect to death. The pistil of the Nigella, when perfect, inclines to the stamen until it becomes fecundated. The Kalmia presents similar powers. The Photomogeton is all under water except the flower; when the flower is in blossom the plant rises to the surface, its leaves float, suspending the fruit until it becomes perfect, then they all sink to the bottom. The staminate flower of the Valisneria is small and fast to the bottom of the water. The pistillate flower has a very long peduncle which is spiral; the flower floats on the waters.—When the water rises it untwists and rises with it. When the staminate plant becomes perfect, the peduncle rots off, the flower rises to the surface and floats upon it. The flower of the Colchicum autumnale is on the top of the plant, and blossoms late in the fall; but the seed is perfected in the root below the surface of the ground, and beyond the power of frost. Utricularia contains little bladders along its leaves; it manufactures a gas which fills these bladders; the plant thus becomes specifically lighter than the water, and floats upon the surface. The plant flowers and fecundates, after which the bladders wither and the plant sinks. The Hedysarum gyrans is always in motion, moving its leaves with astonishing industry. If it be stopped from its action, it instantly resumes it when at liberty, and redoubles its exertions, as if to regain what it had lost. The Onoclea sensibilis withers on being touched by the human hand, though the touch of other substances does not produce the same phenomenon. The leaves of the Populus tremuloides are almost always in motion. The leaf of the Drosera rotundifolia is armed with small hairs standing erect, each of which terminates in a gland, secreting a glutinous viscid matter. Whenever an insect alights upon the leaf or touches any of these glands, there is a shock communicated to the plant, and these glands throw out the gluey matter; the little globules roll together to the place where the insect is struggling, entangle him, clog his limbs, and death is his portion. The leaves and footstalks of the genus Mimosa, too delicate to withstand the rude gaze or endure the presence of any other being, droop, faint, and seemingly wither, and shrink from the approach or touch. A species of the Apocynum is noted for catching flies. The insect, in his search among the nectaries, is seized by the head or leg, and held fast. It seldom escapes; for the more he strives for liberty the tighter he is held. Some plants expand and others close their corols on the approach of light, and others present the same phenomena at the approach of darkness.

J. W. O.

Rise and Fall of Sap in Trees.—Soils.

Messrs. Editors:—Errors promulgated by a popular man should be combatted as well as popular errors. Professor Lindley's theory of the "rise and fall of sap in trees," in your paper of the 27th inst., may be true in many respects, but there are some facts in regard to the matter, which I cannot account for by it. If trees bleed only when the sap is descending, and that consequently, on the roots being expanded with heat and the top contracted with cold, why is it that maple trees will bleed freely early in the spring, when the ground is covered with snow, if the atmosphere is sufficiently warm. Or when the ground is bare or covered with snow, why is it that they will bleed much more freely on the side upon which the sun shines, than on the other where the difference in the heat of the roots can be of no consequence? Or why, after a severe frost, will the sap run as soon as one side of the tree gets moderately warm, before the roots can be materially affected. Theories must be based upon facts, not facts upon theories: therefore have I presented these facts in hopes of getting a theory to fit them.

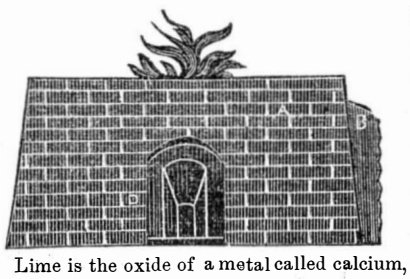
There is also, in a subsequent number, a communication upon soils, not in accordance with facts. A soil in this section is called a heavy clay if it is peculiarly adhesive, sufficiently so to remain in lumps of the size of a half bushel, after plowing; such a soil I have analyzed and found it to contain 76 per cent. of silica and only about 5 of alumina; and, furthermore, pure porcelain clay contains about one-half silica combined with alumina.

S. K. F.

Le Roy, N. Y.

Lime Burning.

Fig. 1.



Lime is the oxide of a metal called calcium, and it is used for a thousand different purposes. As a cement for building it has been long known, and its uses appreciated. It should never be used for building in frosty weather, and to this subject we directed public attention, in the early part of our last volume.—Since that time our city authorities have wisely taken the hint, and have come to the conclusion to build no more sewers, except as works of real necessity, during the winter season.

As we have had a number of enquiries made respecting lime kilns, and the manner of burning it, we publish below four engravings descriptive of the same.

Fig. 2.

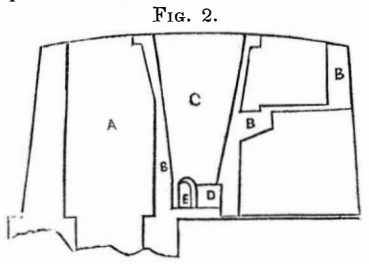


Fig. 1 represents an elevation of the usual form in which kilns to burn lime with coal are frequently built. A is the front wall of the kiln; B, part of a slope made to enable the workmen to mount up to the top of the kiln, to charge it with coal and lime-stone, in alternate beds. C one of the three arches that lead to the fire-room, and through which the lime is withdrawn.

Fig. 2 represents the section of the kiln. A the solid mass of the kiln; B linings of brick or stone; E the hollow cavity of the fire-room and chamber; D, mouth of the fire-room and ash-room; E two of the three arches that lead to the fire-room entrance.

Fig. 3.

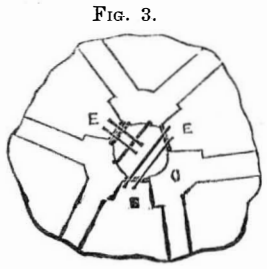


Fig. 3 represents the plan of the kiln. E the three arches leading to the fire-room; O iron bars placed across the bottom of the fire-room, to serve as a grate and supporter of the lime-stone.

Fig. 4 represents a section of a kiln for burning lime, by means of wood. E the main mass of the kiln; B the brick lining of the cavity where the fire and lime-stone are placed; C, the chamber fitted with line stone; D the fire-room. The workman, puts in a fagot to the mouth of the fire-room, and holds it there until it is perfectly alight, when he

Fig. 4.

drops it into the fire-room, and immediately stops up the fire-room door with another fagot and so keeps on: F, the arch-room, which is an arched vault that crosses the bottoms of the kiln; it has a hole in its middle which corresponds with the fire-room, and lets the small coal pass into the ash-vault.

The best form of the kiln is the egg shape and wood is preferred to coal in the burning. A lime kiln should always be built high, and the diameter according to the height. By burning chalk in a kiln, good lime is the result. After lime stone is burned it is much lighter than before, but it recovers its weight in a great measure when exposed to the air, as it absorbs carbonic acid therefrom. The burning of lime is anything but an agreeable or healthy business, but like many others it is very useful and necessary.

There is one thing curious about limestone, viz., if it be imperfectly burned in the first instance, and the stone cooled, no subsequent burning will make it into quick lime. In agriculture, lime is a great fertilizer, and as all marl is a species of lime, it would be all the better for being burned before it is used.

Method of Silvering Iron, as Practised by Major Jewreinoff.

The combination of iron with carbon (cast iron) from the ease with which it melts, and the consequent possibility of taking the finest impressions of form, has come into very extensive application. The art of founding converts cast iron into enormous arches, columns, cannons, and also into the most delicate bracelets, ear-rings, &c. Unfortunately the moist atmosphere very soon alters the surface of these objects, and it is found necessary to coat them with paint, which gives the cast iron, the color of which is itself not very attractive, the appearance of mourning. In the present state of the art of founding, cast iron might easily be substituted for bronze, were it not for its sombre appearance, which entirely excludes it. This disadvantage may, however, be entirely overcome, from the possibility of plating it with silver; in fact, cast iron may be readily silvered, and equally as well as copper and bronze. Some successful experiments which Major Jewreinoff, of St. Petersburg, had made on this subject induced him to give a short description of the method which he had employed. The liquid for silvering is prepared in the following manner:—Cyanide of potassium prepared according to Liebig's method, is introduced into a stoppered vessel, and freshly-prepared pure chloride of silver, still in a moist state, added; the whole being covered with water, and shaken violently for some time, at the ordinary temperature. An excess of chloride of silver is taken, and should a small quantity of it remain undissolved, a few pieces more of the cyanide are added after sometime, taking care, however, to avoid having an excess of the latter salt, but always a small quantity of undissolved chloride at the bottom of the vessel. This last circumstance is important, because when the liquor contains too much free cyanide of potassium, it is easily decomposed, and moreover does not silver so well. Before employing it, it is filtered, and is thus rendered perfectly clear; iron and a little chloride of silver remaining on the filter. He effects the plating by means of a galvanic battery of one pair, consisting of a zinc and a coke cylinder, which are separated from each other by means of an earthen diaphragm. The pair are placed in a glass vessel and dilute nitric acid is conveyed into the earthen diaphragm. Experience has shown that the best mixture for the coke cylinders should consist of five parts, by weight, of finely pulverized coal, and two parts common rye flour.—When the cylinders are dry they are placed in earthen crucibles, in the lids of which there is an aperture for the escape of the gases, and are then heated to redness. Those cast-iron objects may be most easily silvered which have not been painted, as the removal of the paint from the surface of the metal is somewhat difficult. The cleansed object is immersed in the silver solution, and connected with the zinc pole by means of a conducting wire, and a platinum plate immersed in the liquid at some distance from the object to be silvered, and connected with the coke cylinder. A plate of cast iron, of four square inches surface, is generally completely plated in half an hour.

LITERARY NOTICES.

The Scalpel.—The November number of this sterling journal has made its appearance, filled with able and intensely interesting articles, and although a thoroughly medical publication, technicalities are entirely avoided, and the most humble capacity can at once understand the subject discusses in its columns. The "Pathology of a Lady of Fashion," is an article of uncommon interest, and we regret that this number, especially, of the "Scalpel," cannot reach every family in the country: it contains sound articles upon contagious and infectious diseases; the effect of tobacco on virility; the causes of stricture, and the causes and treatment of dysentery, and how it differs from diarrhœa. There can be no doubt of the success of a journal of such merit, when conducted by an M. D. of Dr. Dixon's ability. Each number is sold for the low price of 25 cts., and all orders from the country will be promptly filled, by enclosing that amount in a letter (*p. p.*) to box 3121, New York city.

American Union.—This very excellent and ably edited literary newspaper, published by B. B. Fitts & Co., Boston, Mass., entered last week upon its third volume. Geo. P. Burnham, Esq., the Editor, is well known as one of the first writers in the country.—Terms $2 per annum.

The Water Cure Journal and Herald of Reforms, for November, is now ready, with a valuable contents. Fowlers & Wells, Publishers, 131 Nassau st., N. Y.

We are sorry to miss from our table the monthly visits of Mr. Simond's Pictorial National Library.

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